

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of claims:

1. (Previously Presented) An abnormality detecting device of a fuel cell system, comprising:

a hydrogen off-gas circulation passage for making hydrogen off-gas discharged from a fuel cell flow back to an anode of the fuel cell;

a discharge passage for discharging part of the hydrogen off-gas, which is circulated through the hydrogen off-gas circulation passage, from the hydrogen off-gas circulation passage;

a hydrogen discharge valve provided in the discharge passage; and

an abnormality determining portion for determining whether an abnormality has occurred in opening/closing of the hydrogen discharge valve, further comprising:

a gas state quantity detecting portion for detecting a gas state quantity of the hydrogen off-gas, the gas state quantity detecting portion being provided in the discharge passage at a position downstream from the hydrogen discharge valve, wherein the abnormality determining portion determines whether an abnormality has occurred in opening/closing of the hydrogen discharge valve based on the gas state quantity of the hydrogen off-gas.

2. (Previously Presented) The abnormality detecting device of a fuel cell system according to claim 1, further comprising:

a mixing chamber for mixing the hydrogen off-gas discharged from the discharge passage with external gas, wherein the gas state quantity detecting portion detects the gas state quantity of the hydrogen off-gas which is mixed with the external gas in the mixing chamber.

3. (Original) The abnormality detecting device of a fuel cell system according to claim 2, wherein the external gas is part of oxidizing gas to be supplied to a cathode of the fuel cell.

4. (Currently amended) The abnormality detecting device of a fuel cell system according to claim 1, wherein the hydrogen discharge valve is an electromagnetic valve, and the abnormality determining portion determines whether an abnormality has occurred in opening/closing of the hydrogen discharge valve based on the gas state quantity detected by the gas state quantity detecting ~~means-portion~~ so as to deal with a change in an input of an opening/closing control signal to the electromagnetic valve.

5. (Previously Presented) The abnormality detecting device of a fuel cell system according to claim 4, wherein the abnormality determining portion determines whether an abnormality has occurred in opening/closing of the electromagnetic valve based on a change with time in the gas state quantity detected by the gas state quantity detecting portion so as to deal with the change in the input of the opening/closing control signal to the electromagnetic valve.

6. (Previously Presented) The abnormality detecting device of a fuel cell system according to claim 1, wherein the gas state quantity is a physical quantity related to one of a hydrogen concentration, a flow speed, a pressure, a proportion of each ingredient, a temperature and a dielectric constant of the hydrogen off-gas.

7. (Currently amended) The abnormality detecting device of a fuel cell system according to claim 1, further comprising:

a gas state quantity detecting portion for detecting the gas state quantity of the hydrogen off-gas, the gas state quantity detecting portion being provided in the discharge passage at a position upstream from the hydrogen discharge valve, wherein the abnormality determining ~~means-portion~~ detects an abnormality in opening/closing of the hydrogen discharge valve based on the gas state quantity detected by the gas state quantity detecting portion provided on each of an upstream side and a downstream side of the hydrogen discharge valve.

8. (Previously Presented) The abnormality detecting device of a fuel cell system according to claim 1, further comprising:

a gas-liquid separating portion for separating the hydrogen off-gas into gas and liquid,

wherein the gas state quantity detecting portion detects the gas state quantity of the hydrogen off-gas which has been separated into gas and liquid by the gas-liquid separator.

9. (Previously Presented) The abnormality detecting device of a fuel cell system according to claim 6, further comprising:

a pressure sensor which is provided in the discharge passage at a position downstream from the hydrogen discharge valve, and which detects a pressure of the hydrogen off-gas.

10. (Previously Presented) The abnormality detecting device of a fuel cell system according to claim 6, further comprising:

a temperature sensor which is provided in the discharge passage at a position downstream from the hydrogen discharge valve, and which detects a temperature of the hydrogen off-gas.

11. (Previously Presented) The abnormality detecting device of a fuel cell system according to claim 6, further comprising:

paired electrodes which are provided in the mixing chamber and which are opposed to each other in order to detect a dielectric constant of the hydrogen off-gas.

12. (Previously Presented) The abnormality detecting device of a fuel cell system according to claim 6, further comprising:

a heat wire resistance which is provided in the mixing chamber and which detects a heat conductivity of the hydrogen off-gas.

13. (Previously Presented) The abnormality detecting device of a fuel cell system according to claim 1, further comprising:

a portion for dealing with a failure when the abnormality determining portion detects an abnormality in opening/closing of the hydrogen discharge valve.

14. (Previously Presented) The abnormality detecting device of a fuel cell system according to claim 1, wherein the gas state quantity detecting portion being provided in the discharge

passage at a position outside the hydrogen off-gas circulation passage.